

CLAIM AMENDMENTS

Claims 1-28. (Cancelled)

29. (New) A rechargeable electrochemical cell which is subjected to multiple charging cycles and discharging cycles, each charging cycle having a charging portion corresponding to a gassing charge where a gas is generated in the rechargeable electrochemical cell and a charging portion below the gassing charge, the rechargeable electrochemical cell comprising;

opposed positive and negative electrodes;

an aqueous electrolyte in ionic contact with the electrodes for supporting current flow therebetween; and,

charge dependant impeding means, disposed in the electrolyte and having a constituent thereof bonded to the negative electrodes, for forming a barrier for impeding the gassing charge, the charge dependant impeding means activated by the charging portion corresponding to the gassing charge and being deactivated by the charging portion below the gassing charge such that when activated, the charge dependant impeding means impedes the gassing charge to limit gas generation in the rechargeable electrochemical cell, and when deactivated, the charge dependant impeding means has substantially no charge limiting effect, the charge dependent impeding means being deactivated and having substantially no effect during the discharge cycle.

30. (New) The rechargeable electrochemical cell according to claim 29, wherein the charge dependent impeding means is a quaternary ammonium compound selected from the group consisting of alkyl dimethyl benzyl ammonium chloride, didecyldimethyl ammonium chloride, didecylmethoxyethyl ammonium propionate, pyridine and quinoline.

31. (New) The rechargeable electrochemical cell according to claim 29, wherein the

charge dependent impeding means is a non-ionic compound selected from the group consisting of primary, secondary, tertiary, aliphatic and cycloaliphatic amines.

32. (New) The rechargeable electrochemical cell according to claim 29, wherein the charge dependent impeding means is sodium dioctyl sulpho succinate.

33. (New) The rechargeable electrochemical cell according to claim 29, wherein the charge dependent impeding means is an alkyl dimethyl benzyl ammonium chloride, the alkyl containing from 12 to 16 carbon atoms.

34. (New) The rechargeable electrochemical cell according to claim 33, wherein the alkyl dimethyl benzyl ammonium chloride is present in the aqueous electrolyte at from about 5 mg/l to about 1500 mg/l.

35. (New) The rechargeable electrochemical cell according to claim 33, wherein the alkyl dimethyl benzyl ammonium chloride is present in the aqueous electrolyte at from about 5 mg/l to about 75 mg/l.

36. (New) The rechargeable electrochemical cell according to claim 29 wherein the charge dependant impeding means is soluble in the aqueous electrolyte.

37. (New) The rechargeable electrochemical cell of claim 29 wherein the charging cycle comprises a substantially constant current being applied to the opposed positive and negative electrodes, activation of the charge dependant impeding means causing a rise in voltage across the positive and negative electrodes.

38. (New) The rechargeable electrochemical cell of claim 29 wherein the charging cycle comprises a substantially constant voltage being applied to the opposed positive and negative electrodes, activation of the charge dependant impeding means causing a drop in current across the positive and negative electrodes.

39. (New) The rechargeable electrochemical cell of claim 29 wherein the rechargeable electrochemical cell is a lead-acid battery.

40. (New) The rechargeable electrochemical cell of claim 29 wherein the charge dependant impeding means has a slow release form.

41. (New) The rechargeable electrochemical cell of claim 29 wherein the charge dependant impeding means contains elements from the fifth or sixth periodic groups.

42. (New) A method for reducing water loss due to electrolysis of an aqueous acid electrolyte in a rechargeable electrochemical cell which is subjected to multiple charging cycles and discharging cycles, each charging cycle having a charging portion corresponding to a gassing charge where hydrogen gas is generated by electrolysis of the aqueous electrolyte and a charging portion below the gassing charge, the rechargeable electrochemical cell having opposed positive and negative electrodes, the aqueous electrolyte in ionic contact with the positive and negative electrodes for supporting current flow therebetween, the method comprising:

providing charge dependant impeding means disposed in the aqueous electrolyte, and bonding a constituent of the charge dependant impeding means to the negative electrodes, for forming a barrier to impede the gassing charge, the charge dependant impeding means being activated by the charging portion corresponding to the gassing charge and being deactivated by the charging cycle portion below the gassing charge, the charge dependent impeding means being deactivated and having substantially no effect during the discharge cycle; and,

applying a charging cycle to the rechargeable electrochemical cell, activating the charge dependent impeding means when a gassing charge is attained, impeding the gassing charge to reduce water loss due to electrolysis.

43. (New) A rechargeable electrochemical cell which is subjected to multiple charging cycles and discharging cycles, each charging cycle having a charging portion corresponding to a gassing charge where a gas is generated and a charging portion below the gassing charge, the rechargeable electrochemical cell comprising opposed positive and negative electrodes, an aqueous electrolyte in ionic contact with the electrodes for supporting current flow therebetween, and charge dependant impeding means disposed in the electrolyte and having a constituent thereof attached to the negative electrodes for impeding the gassing charge, the charge dependant current impeding means being activated by the charging portion corresponding to the gassing charge to impede the gassing charge to reduce gas generation at the negative electrodes, and being deactivated at a charging cycle below the gassing charge to have substantially no charge limiting effect, the charge dependant impeding means when activated forming a barrier over a surface of the negative

electrodes to impede ions attracted to the negative electrodes.

44. (New) The rechargeable electrochemical cell according to claim 43, wherein the barrier further contains gas bubbles evolved from the negative electrode.

45. (New) The rechargeable electrochemical cell according to claim 43 wherein the charge dependant impeding means have head portions attached to the negative electrode surfaces and tail portions extending into the electrolyte away from the head portions.

46. (New) The rechargeable electrochemical cell according to claim 43, wherein the rechargeable electrochemical cell is a secondary battery cell.

47. (New) The electrochemical cell according to claim 43, wherein the charging portion corresponding to the gassing charge is a threshold potential above which the charge dependant impeding means is activated and below which the charge dependant impeding means is deactivated.

48. (New) The electrochemical cell according to claim 44, wherein a quantity of gas bubbles contained in the barrier correlates with a strength of impediment to ions attracted to the negative electrode.

49. (New) The rechargeable electrochemical cell according to claim 43 wherein the barrier impedes ions selected from the group consisting of lead, antimony, arsenic, tin, iron, zinc, chromium, copper and silver ions.

50. (New) The rechargeable electrochemical cell of claim 29 wherein the charge dependant impeding means contains elements from the fifth or sixth periodic groups.